

Notice of Allowability

Application No.

10/822,113

Examiner

Steven H. Rao

Applicant(s)

FARNWORTH ET AL.

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 04/08/2004.
2. ☒ The allowed claim(s) is/are 21 and 22.
3. ☒ The drawings filed on 08 April 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 04/08/2004
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____.
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

Priority

Receipt is acknowledged of paper submitted under 35 U.S.C. 120, claiming priority from U.S> Serial No. 10/315,511 filed December 9, 2002 (now allowed) which is a continuation of U.S Serial No. 10/092,829 (USP 6,515,325) filed March 06, 2002 papers have been placed of record in the file.

Continued Prosecution Application

The request filed on 04/08/2004 for a Divisional Application (DA) under 35 USC 120 based on parent Application No. 109/092829 is acceptable and a DA has been established. An action on the DA follows.

Information Disclosure Statement

Acknowledgment is made of receipt of Applicant's Information Disclosure Statement (PTO-1449) filled April 08, 2004.

The references on PTO 1499 submitted on 04/08/04 are acknowledged. All the cited references have been considered. However the foreign patents and documents cited by applicant are considered to the extent that could be understood from the abstract and drawings.

Preliminary Amendment Status

Acknowledgment is made of entry of preliminary amendment filed 04 /08 / .2004.

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Therefore claims 21-22 as recited in the preliminary amendment are currently pending.

Claims 1-20 and 23-29 have been cancelled by the amendment.

Reasons for allowance

Claims 21-22 are allowed.

The following is an examiner's statement of reasons for allowance:

The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitation of the dependent claims, in such manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in independent claims (claims 21 and 22) , which include a method of making a semiconductor device comprising the steps of providing a substrate; forming a first insulation layer on the substrate; forming a nucleation layer on the first insulation layer; patterning the nucleation layer to cover the nucleation layer such that portions of the nucleation layer remain exposed; forming nano tubes on the exposed portions of the nucleation layer, the nano tubes oriented to be substantially vertical in relation to the substrate; forming an insulative layer over exterior walls of the nanotubes; forming rings of conductive material about the exterior walls of the nanotubes; and forming a second insulation layer over the exterior walls of the nanotube (for claim21) and for Claim 22 a method of making an electrical interconnect in a semiconductor device including the steps of providing a substrate having a first trace layer; forming a nucleation layer on the substrate; patterning the nucleation layer such that a portion of the nucleation layer remains exposed; forming a nano tube on the

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exposed portion of the nucleation layer, the nano tube having a lower end connected to the first trace layer; forming an oxide layer over exterior walls of the nano tube and over the nucleation layer; patterning the oxide layer to expose an upper end of the nanotube; and forming a second trace layer such that the upper end of the nanotube is connected thereto. (for device claims See USP NO. 6,515,325 and allowed US serial No. 10/315,511).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H. Rao whose telephone number is(571) –272-1718. The examiner can normally be reached on 8.00 to 5.00.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Steven H. Rao

Patent Examiner

September 23, 2004.



LONG PHAM
PRIMARY EXAMINER